

SUBSYSTEMS

TGMS - Track Geometry Measurement System

The TGMS is the heart of geometry data acquisition. It collects data from a variety of sources every foot, digitizes the data, processes sensor inputs into track measurements, compares the results with the FTSS sends exceptions to the EDITOR. Simultaneously, the TGMS calculates speed and synchronizes data sampling throughout the system, while storing raw data and processed data in data files.

EDITOR SYSTEM

The Editor System collects and displays Exception and Curve data from the TGMS. It also displays the current Milepost, Posted Class, Track Number, and Speed. System operators can delete specific data and correct operator entered information, if necessary. The EDITOR controls the network. The Editor Monitor (facing page) displays data in a comprehensible manner. The Editor controls the printing of all reports.

DGMS - Differential GPS Measurement System

The DGMS collects data from the Differential Global Positioning System (DGPS) on one-second intervals. Due to system latency and time based sampling, corrections are made automatically. If the vehicle is travelling at a speed of 88 feet /second (60 MPH), the TGMS will have sampled 89 points while the DGMS has only received 2 points. In order to "fill in the blanks" the DGMS receives in addition to the DGPS input, curve rate information from the curvature system and calculates the intermediate points. This data is available to the EDITOR and is stored in data files for immediate or future use. The DGMS data is synchronized to the TGMS data in the EDITOR to define the location of a defect using global map coordinates (latitude and longitude). The system operator has the option of including the GPS coordinates in the Exception Report or suppressing them.

RQMS - Ride Quality Measurement System

The RQMS collects data from sensors mounted on the car body and the trucks. These sensors measure lateral and vertical accelerations. The FTSS has prescribed limits for Carbody and Truck accelerations, lateral and vertical, that cannot be exceeded in Classes 7, through 9. High lateral and/or vertical accelerations can directly relate to track geometry anomalies. The system operator has three options concerning the method of reporting RQMS data. The locations and values of ride quality measurements that exceed the threshold can be included in the Exception Report, not included in the Exception Report or printed as a stand alone report.

PAINT SPRAY SYSTEM

As exceptions to the FTSS are identified, signals are sent to a solenoid to activate the paint sprayer. The paint sprayer sprays paint on the ties for use in locating the defect. Individual geometry parameters can be turned on and off in the event of system malfunctions or in cases that there are so many defects that the paint is ineffective.